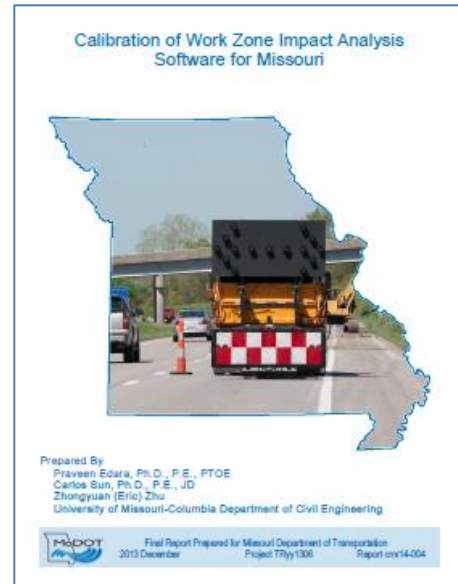


Research Summary

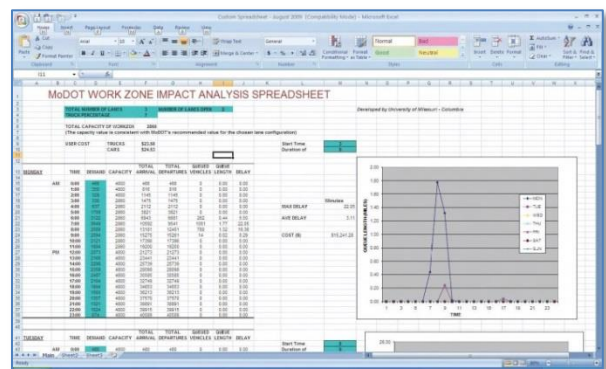
Calibration of Work Zone Impact Analysis for Missouri

In 2008, the University of Missouri evaluated several software programs for work zone traffic impact analysis and identified appropriate analytical tools for assessing traffic impacts at different types of work zones. The research project looked at QuickZone, CA4PRS, and VISSIM. As part of the research project, a work zone spreadsheet was developed. The spreadsheet produces queue length and delay estimates with a minimum amount of input data. Traffic engineers at MoDOT have found the software easy to use and a valuable tool when designing a work zone.

The research found that for rural interstates, divided roadways and multilane undivided highways in Missouri, the custom work zone spreadsheet should be used to estimate the traffic impacts of work zone lane closures. For work zones in urban areas where lane closures on a roadway may impact the traffic on neighboring roadways, the VISSIM program should be used. For two-way one-lane work zone with flaggers, Quick Zone should be evaluated as a first option. However, in situations with high input volumes and/or where close detour routes are not available, Quick Zone does not work well and VISSIM should be used.



A follow-up project was started in 2012 to use real Missouri work zone data to validate the results of the work zone spreadsheet and the VISSIM program. During the 2013 construction season, data from work zones was collected from traffic sensors and video monitoring systems. Calibration factors were developed for both the Custom Work Zone spreadsheet and the VISSIM program. The study found that calibration based on delay or travel time exhibited better overall performance than calibrating based on queue length.



Snapshot of Work Zone Software Program



For more information on phase I of the project, please refer to the final report published in September 2009 by MoDOT, *Evaluation of Work Zone Enhancement Software*, report number OR 10-006. The report is available on the MoDOT [Innovation Library website](#).

*The **work zone spreadsheet** produced the best results when the average capacity was 1,575 vehicles per hour per lane.*

*The **VISSIM model** performed best when the average capacity was 1,514 vehicles per hour per lane.*

*MoDOT traffic engineers have found the software **easy to use** and a **valuable tool** when designing a work zone.*

Project Information

PROJECT NAME: Evaluation of Work Zone Software Programs Phase 2: Validation using Field Data

PROJECT START/END DATE: June 25, 2012-February 28, 2014

PROJECT COST: \$30,649

LEAD CONTRACTOR: University of Missouri-Columbia

PRINCIPAL INVESTIGATOR: Dr. Praveen Edara

REPORT NAME: *Calibration of Work Zone Impact Analysis Software for Missouri*

REPORT NUMBER: [cmr 14-004](#)

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